

WHAT IS CLAIMED IS:

1. An inductor formed on a printed circuit board comprising:
a plurality of conductive traces on a surface of said printed circuit board;
a single magnetic core positioned on said surface over said conductive traces; and
5 a plurality of pie-slice shaped conductors positioned on said traces, wherein each
of said plurality of pie-slice shaped conductors is fastened in offset fashion to a
corresponding pair of said conductive traces to surround said core so as to create a coil.
2. The inductor of Claim 1, wherein said magnetic core is a toroidal core.
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3. The inductor of Claim 2, wherein said toroidal core is composed of a ferrite
material.
4. The inductor of Claim 1, wherein said core is composed of a non-ferrite material,
15 said inductor further comprising a dielectric coating for said core to insulate said core
from said conductive traces.
5. The inductor of Claim 1, wherein said plurality of pie-slice shaped conductors
comprises six conductors.
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6. The inductor of Claim 1, wherein each said pie-slice shaped conductor comprises
a pie-slice shaped portion and a plurality of fingers extending downwardly from the plane
of said pie-slice shaped portion, each said finger shaped to contact one of said conductive
traces.
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7. The inductor of Claim 6, wherein said plurality of fingers comprises five fingers.
8. The inductor of Claim 6, wherein said pie-slice shaped portion includes an arc-
shaped circumference end and another end, said pie-slice shaped portion being broadest
30 at the arc-shaped circumference end, each said pie-slice shaped conductor having each of

said fingers extending downwardly in a perpendicular direction from the plane defined by said pie-slice shaped portion.

9. The inductor of Claim 8, wherein a single finger extends downwardly in a perpendicular direction from said circumference end of said pie-sliced shaped portion.

10. The inductor of Claim 1, wherein each said conductor forms a top half turn of a full turn of a winding loop of said coil and each corresponding conductive trace forms a bottom half turn of each corresponding full turn, such that each said pie-slice shaped conductor is used for each said winding loop of said coil.

11. The inductor of Claim 1, wherein said conductive traces converge at a center portion and each said conductive trace has an offset near said center portion so as to enable each said conductor to be fastened in offset fashion to a corresponding pair of conductive traces.

12. The inductor of Claim 1, wherein an offset is formed from each said conductor so as to enable each said conductor to be fastened in offset fashion to a corresponding pair of said conductive traces.

13. The inductor of Claim 1, wherein said printed circuit board comprises a plurality of additional circuit traces on said surface for enabling connection to components mounted thereon and a plurality of terminals formed thereon to enable connection of a first end and a second end of said coil to said components.

14. The inductor of Claim 10, wherein a separate electrical connection is made on one of said full turns so as to form a three terminal device, thereby enabling operation of said inductor as a tapped inductor.

15. The inductor of Claim 10, wherein said inductor includes one or more breaks in said winding loop so as to enable electrical connection to be made to said turns to enable operation of said inductor as a transformer.
- 5 16. The inductor of Claim 1, wherein said conductors are preassembled as a single unit using a non-conductive potting compound prior to placement on said printed circuit board using automated equipment.
- 10 17. The inductor of Claim 1, wherein said conductors are preassembled as a single unit using a potting assembly, said core being surrounded by said conductors in said potting assembly prior to automated placement on said printed circuit board.
18. A method for forming an inductor on a printed circuit board having a plurality of conductive traces on a surface thereof, comprising the steps of:
- 15 positioning a single magnetic core on said surface over said conductive traces; positioning a plurality of pie-slice shaped conductors on said traces, and fastening each of said plurality of pie-slice shaped conductors in offset fashion to a corresponding pair of said conductive traces to surround said core so as to create a coil.
- 20 19. The method of Claim 18, further comprising the step of preassembling said conductors as a single unit before said positioning of said conductors on said traces.
20. The method of Claim 19, wherein a non-conductive potting compound is used for said preassembling step.
- 25 21. The method of Claim 20, including the steps of providing a potting assembly, preassembling said conductors as a single unit into said potting assembly, positioning said core into said potting assembly such that said conductors surround said core, and positioning said potting assembly containing said conductors and said core onto said
- 30 printed circuit board using automated equipment.

22. The method of Claim 20, wherein said fastening step further comprises soldering said conductors in place on said printed circuit board during a reflow process for the entirety of said printed circuit board.

5 23. The method of Claim 18, wherein said fastening step includes forming a top half turn of a full turn of a winding loop of said coil from each said conductor and forming a bottom half turn of each corresponding full turn from each corresponding conductive trace such that each said pie-slice shaped conductor is used for each said winding loop of said coil.

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24. The method of Claim 18, wherein each said pie-slice shaped conductor comprises a pie-slice shaped portion and a plurality of fingers extending downwardly from the plane of said pie-slice shaped portion, each said finger shaped to contact one of said conductive traces.

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25. The method of Claim 18, wherein said printed circuit board further includes a plurality of circuitry traces on said surface for enabling electrical connection to circuitry mounted thereon, further comprising the step of forming a first and second terminal on said printed circuit board to enable connection of a first end and a second end of said coil to said circuitry.

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26. The method of Claim 25, further comprising the steps of:

separating one of said conductive traces into first and second portions wherein said first portion is electrically isolated from said second portion;

25 connecting said first terminal to said first portion and said second terminal to said second portion;

placing one of said conductors to connect between a first offset center pad and said conductive trace adjacent to said first separated portion to form one end of said coil connected to said first terminal; and

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placing another of said conductors to connect between a second offset center pad and said conductive trace adjacent to said second separated portion to form the other end

of said coil connected to said second terminal such that said first and second terminals provide a path to enable connection of said coil to said circuitry on said printed circuit board.